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The Japanese salmon market:

AN ANALYSIS OF THE CONSUMPTION PATTERN OF JAPANESE HOUSEHOLDS

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Introduction

Much work has been done in recent years to expand the international markets for fresh farmed salmon. Many producers of wild and farmed salmon concentrate on the Japanese market, which is potentially profitable. The Japanese salmon market is the world's biggest. In 1989, an average Japanese household consumed at home 5 kg of fresh and salted salmon.

The Japanese salmon market displays some interesting trends. The total salmon consumption per household was relatively stable in 1980 - 1989. If the consumption is divided between fresh and salted salmon, some interesting patterns show up. Expenditures for fresh salmon have increased in these households evenly from 1.3 % of total expenditures for fish and shellfish in 1980 to 1.7 % in 1989. In the same period, expenditures for salted salmon showed an even decline from 5.9 % to 5.3 %. Also, the share of imports of the total salmon supply in Japan rose from 32 % in 1985 to 38 % in 1989. The import of fresh salmon increased its share of the Japanese market from 0.5 % of total imports in 1985 to 6.8 % in 1989. 55 - 65 % of the fresh salmon imported into Japan has originated in Norway.

However, there are limitations to the potential fresh salmon market in Japan. For example, as the total salmon consumption is stable, any future increase in the consumption of fresh salmon may be limited, unless the consumption of salted salmon continues to decline. Further, the Japanese consumer has today a larger selection of protein sources from which to choose. This, combined with the "westernization" of the Japanese taste and preferences, may mean that salmon will have to compete harder for its

percentage of the fish and shellfish expenditures of households. Thus, the Norwegian Atlantic salmon may face in the Japanese market a growing competition from salmon imported from other countries, particularly sockeye from North America. The Norwegian salmon industry has concentrated up to now on sales to restaurants. To develop new market possibilities, it is important to learn to understand the demand in the Japanese households.

The present study analyzes the demand for seafood in Japanese households. It focuses on seasonal fluctuations and regional patterns in the consumption of salmon and other important fish species. The percentages pointed out above are interesting, but they also hide other significant characteristics of salmon consumption in Japanese households. For example, there are regional differences in the consumption patterns. Households in Northern Japan have seafood preferences differing from those in southern Japan. Besides, the percentages presented above are yearly figures yielding no information about seasonal variations. The variations are based on the cyclic nature of different fisheries and on traditional causes such as holidays.

Salmon consumption in Japanese households

In North America and Europe, salmon is frequently characterized as a luxury. North American fish consumption takes place mainly on the coasts and urban areas. This is especially true for the restaurant industry.

Generally, the Americans eat little fish. Besides, they have generally little knowledge about different fish species and the quality of the fish they eat. In Japan, fish is an important component of the daily fare, and consumers have an extensive knowledge of fish products.

In 1980 - 1989, the expenditures of the Japanese households for fish and shellfish made up an average of 14 % of their total food budget. Salmon is the most popular species. Salted salmon and fresh/frozen salmon are the two most important products. They are packed and marketed in several ways. The majority of the salmon consumed is not looked upon as a luxury product. Salmon is usually eaten for breakfast or brunch. However, the Japanese eating habits are being influenced by Western habits. Salmon is therefore served as a main course at dinner as well. One of the reasons for its popularity is that it is easy to prepare. Most fish sold in the market is roundfish, which must be gutted and cleaned. Salmon, on the other hand, is available as portions requiring less preparation. A meal usually consists of white rice and salted salmon which can be grilled fast. This ease of preparation is particularly important for the growing number of women in the labor force.

The fact that salmon was not previously eaten in restaurants is based on several reasons. As so much salmon is consumed at home, it has no particular appeal in restaurants, where consumers usually eat food that they do not prepare at home. They expect that the dishes served in a restaurant are prepared by professional cooks. As salmon is easy to prepare, it is not considered suitable as dinner food. Now, these views

are beginning to change, due to the introduction and aggressive marketing of farmed salmon from British Columbia, Chile, and Norway.

Two other features characterizing the fish and shellfish consumption by Japanese households deserve mention. In Europe and North America, it is customary to include only one protein source in a meal, which may consist, for example, of pork with vegetables and potato. In Japan, a meal may include more than one source of protein. It may consist, for example, of salted cod roe, dab and cuttlefish. The fish species combinations served at meals vary with the seasons. Therefore, salmon may be a substitute for another fish species one month and for some other species at other times. Secondly, there are generally understood quality differences between species. Goldfinny and lobster are used for meals frequently served on special occasions such as weddings or new year's parties. Dab, cuttlefish and bonito are regarded as first-class fish not eaten every day. Horse mackerel is a fish for every day, like salmon.

Factors influencing Japanese demand for salmon

Figure 1 shows salmon consumption in different regions. From left to right, the regions appear roughly in a north-to-south direction.

Households in the northernmost regions of Japan, including Hokkaido, Tohoku, Hokuriku and Kanto (which contains Tokyo), prefer and consume primarily chum salmon caught in northern Japan. Households in the southern regions, including Kinki (which contains Osaka), prefer and consume primarily imported sockeye.

Two important consumption features can be seen in Figs. 2 and 3. First, northern households, represented by Hokkaido, consume every month more fresh and salted salmon than households in the south, which are represented by Shikoku. The reasons are historical. The chum salmon fishery, which is very important, takes place in northern Japan. Before the present improved state of transport and cold storage, most salted products were harvested, prepared and consumed locally in the north. Secondly, expenditures for fresh and salted salmon show seasonal variations. Seasonal variations occur widely in Japan, not just in northern regions like Hokkaido, which is the biggest consumer. In fall, consumption increases because of a better availability of domestic and imported wild salmon. December is the high season for salted chum, which is a popular gift customarily presented to family members and business colleagues in July and December. Food items are considered suitable gifts, especially those in season. A whole salted chum salmon is a popular new year's gift.

Estimation of demand

The following text will discuss four questions: Does season play a significant role in Japanese demand for fish generally and salmon particularly ? Is there a significant difference in fish consumption between the northern and southern regions of Japan ? What are the main fish species with which salmon competes ? How sensitive is demand for salmon to changes in the prices of salmon and other fish species ?

Econometric techniques were used to draw up equations representing demand for nine seafood products. Methods were developed for the determination of 1) effect of price of each seafood product on demand for other fish species, 2) effect of season, and 3) differences between regions. The equations were drawn up using official, published data on monthly purchases by households from 1979 to 1986, separately for northern and southern Japan, with regard to the following seafood products: salmon, tuna, cuttlefish, horse mackerel, plaice, dab, and goldfinny, and salted products of salmon and cod roe.

The demand equations were drawn up in the form of budget quotas, meaning that a household was assumed to have a certain amount of money to spend monthly on a given group of the nine fish products. These amounts were distributed over the nine products in such a manner that all money was spent. The budget quota for fresh salmon, for example, was a function of the price of fresh salmon, prices of all the other fish products, total expenditures for the whole group of fish products, and variables covering seasonal effects. Regional prices were available only for these nine products.

The nine seafood products included in the group were among the thirteen seafood product types that represent 45 % of the seafood expenditures for entire Japan, each having a budget quota of 1.5 % or higher. The products constituting the remaining 55 % make up individually less than 1.5 % of the fish and shellfish budget. Table 1 indicates the national and regional expenditures of Japanese households per fish species and product in 1989. It shows that quite a number of seafood products are included in the

Japanese diet but that most of them make up only a small percentage of the total budget for seafood.

Dramatic differences can be seen between north and south in the expenditures for different fish species. Salted salmon, flounder and salted cod roe constitute in northern Japan a large percentage of the budget for fish and crustaceans. In southern Japan, the percentages are larger for horse mackerel, dab, and goldfinny.

Analysis and conclusions

The results point out that in Japanese households, season plays a significant role in the demand for both fresh and salted salmon. The percentage of expenditures for salted salmon increases evenly from January to August in both northern and southern Japan. In both regions, the increase is followed by a significant decline in September - November. In the north, this decline corresponds to a growing percentage of the budget being spent on substitute fish species such as flounder, dab, and fresh salmon. Fresh salmon can be assumed to be primarily a substitute for fall chum and to a minor degree for salted cod roe. In the south, the decline seen in the budget share for salted salmon indicates a substitute relation with dab and flounder but not with fresh salmon.

Results obtained from the south (south of Tokyo but including Osaka) are especially interesting. In southern Japan, a considerable increase takes place in the consumption of fresh salmon in the summer months (June til end of August), even though the percentages of fresh salmon expenditures

increase neither in the south nor in the north in the fall. The June - August period coincides with the arrival of the North American sockeye. The ratio of the expenditures for fresh salmon seems to be influenced most by changes in the prices of cuttlefish, horse mackerel, dab, tuna, and goldfinny. If sockeye is assumed to be the dominant species consumed in the south, some conclusions may be drawn. The role of sockeye in the fish consumption system seems to be fairly complicated. Fresh/frozen sockeye seems to compete strongly in southern Japan with an assortment of species available during the summer (fresh cuttlefish, dab, tuna, goldfinny and horse mackerel). For the rest of the year, sockeye is mainly consumed as a salted product, and it competes then in a completely different market. This market is characterized more by raw material consumption, and sockeye competes here with such standard products as salted cod roe and domestic chum (both fresh and salted).

The effect of price on sales of fresh and salted salmon varies in the course of a year. Demand for fresh salmon is more price-dependent in the winter months (December to end April) than in the fall (September to end November). The demand is thus more price-sensitive during the period when most of the "fresh" salmon on the market is not really fresh but rather thawed salmon from the freezing plant. The average Japanese consumer knows very well in which months to expect the freshest salmon. Therefore, he is not willing to pay high prices for salmon caught four months earlier.

Demand for fresh salmon is more price-dependent in the south than in the north. The demand is least price-dependent in northern Japan in November,

when abundant fall chum is available, and in southern Japan in July, the middle of the sockeye season.

The price-dependence pattern of the demand for salted salmon is similar to that for fresh salmon in the sense that the dependence is greater in the south than in the north and greater in the winter than in the summer and fall. For salted salmon, price dependence is lowest in December, due to the unique position the product has in the gift market. This applies particularly to northern Japan and less to the southern regions.

Further research of Japanese salmon market

The present study is part of an ongoing project at the University of Rhode Island. The project investigates many sides of the Japanese seafood market, the salmon market in particular. Studies have been done also on the effect of price instability, cold storage size, and different currency rates on salmon importation decisions. Here, the focus has been on the Japanese import of American sockeye salmon. Inquiries concerning the research may be addressed to the authors of this article, Department of Resource Economics, University of Rhode Island, Kingston, Rhode Island 02881, USA.

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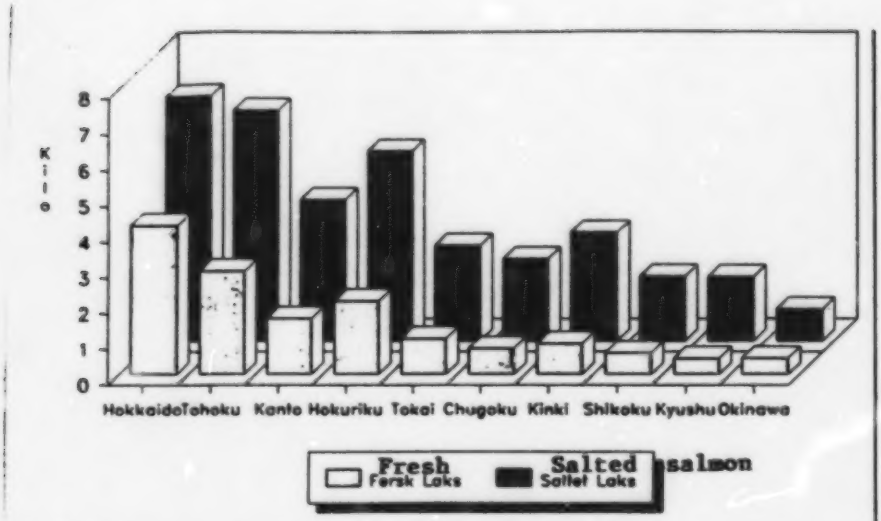

Kilde: Annual Report on the Family Income and Expenditure Survey, 1989

Figure 1 Salmon consumption per household in different regions, 1989

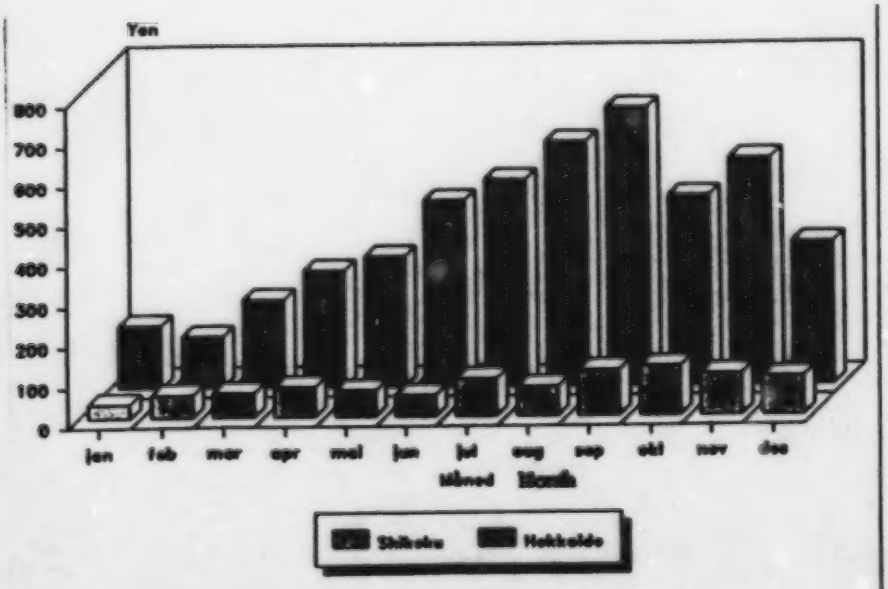

Figure 2 Monthly expenditures per household – fresh salmon, 1989

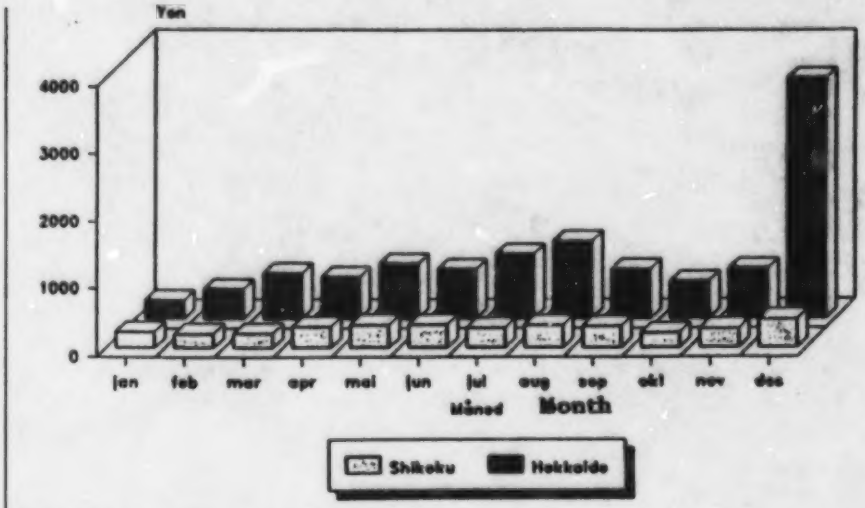

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Figure 3 Monthly expenditures per household – salted salmon 1989

Table 1 Japanese seafood expenditures – 1989
Averages per household (Yen)

	Japan	North	South
Fish and shellfish	129.880	135.480	124.500
Fresh fish and shellfish	75.448	74.940	75.948
Salted and dried fish	28.990	31.672	22.985
Ground fish products	12.272	11.280	13.205
Other processed fish	15.150	18.078	12.252
Percentages of total expnditures for fish and shellfish:			
Fresh:			
Tuna	6.1%	5.2%	5.3%
Horse mackerel	2.2	1.4	1.8
Bonito	1.6	1.4	1.8
Flounder	2.3	3.2	2.2
Salmon	1.7	2.6	1.0
Dab	3.2	2.8	3.8
Cuttlefish	4.6	4.9	4.8
Goldfinny	1.8	0.7	3.0
Shrimp and lobster	6.0	5.0	6.8
Shellfish	5.3	5.5	4.8
Salted:			
Salmon	5.3	7.0	3.5
Cod roe	2.8	3.1	1.9
Subtotal	42.9	42.8	41.4
Other fish	52.1	57.2	58.6